

RECEIVED
 AUG 16 2001
 TECH CENTER 1600/2300
 ENTERED

RAW SEQUENCE LISTING
 PATENT APPLICATION: US/09/432,820

DATE: 07/19/2001
 TIME: 15:45:44

Input Set : A:\A57004-4.ST25.txt
 Output Set: N:\CRF3\07192001\I432820.raw

5 <110> APPLICANT: Kapoor, Archana
 6 Munshi, Anil
 9 <120> TITLE OF INVENTION: MEMBRANE-ASSOCIATED IMMUNOGENS OF MYCOBACTERIA
 12 <130> FILE REFERENCE: A-57004-4/RFT/JJD
 15 <140> CURRENT APPLICATION NUMBER: US 09/432,820
 16 <141> CURRENT FILING DATE: 1999-11-02
 18 <150> PRIOR APPLICATION NUMBER: US 09/099,902
 19 <151> PRIOR FILING DATE: 1998-06-18
 21 <150> PRIOR APPLICATION NUMBER: US 08/710,676
 22 <151> PRIOR FILING DATE: 1996-09-23
 24 <150> PRIOR APPLICATION NUMBER: US 08/192,632
 25 <151> PRIOR FILING DATE: 1994-02-07
 27 <150> PRIOR APPLICATION NUMBER: US 07/906,395
 28 <151> PRIOR FILING DATE: 1992-06-29
 30 <160> NUMBER OF SEQ ID NOS: 2
 32 <170> SOFTWARE: PatentIn version 3.0
 35 <210> SEQ ID NO: 1
 36 <211> LENGTH: 3250
 37 <212> TYPE: DNA
 38 <213> ORGANISM: Mycobacterium bovis
 40 <220> FEATURE:
 41 <221> NAME/KEY: CDS
 42 <222> LOCATION: (508)..(2790)
 45 <400> SEQUENCE: 1
 46 ggatcccgcg gtcacgcgc ggggtcaaaca ccgcctcgac ggggttcacgc tggcgccgct 60
 48 gtccaccgcc gcgggaggtg gtggccggca gccacgcac tactacggca ccatcctgac 120
 50 cggtgaccac taccttcaact gcgagcgac ccgcaaccgg ctgcaccacg aactcggcgg 180
 52 tatggccgct gaaatggaag gcggtgcggt ggcgcaaata tgcgcgtcct tcgatatccc 240
 54 atggctggct attcgcgcgc tctccgatct cgccggagcc gattcggggg tggacttcaa 300
 56 tcggtttgtc ggcgaggtgg cggccagttc ggcccgcgtt ctgctgcgct tgcgtccggt 360
 58 gttgacggcc tgttgaagac gactatccgc cgggtgcgtt accgcgtcag gcggcttcgg 420
 60 tgaggtgagt aatttggtca ttaacttggc catgccgccg ccgatgttga gcggaggcca 480
 62 caggtcggcc ggaagtgagg agccacg atg acg gcg gcc gtg acc ggt gaa cac 534
 63 Met Thr Ala Ala Val Thr Gly Glu His
 64 1 5
 66 cac gcg agt gtg cag cgg ata caa ctc aga atc agc ggg atg tcg tgc 582
 67 His Ala Ser Val Gln Arg Ile Gln Leu Arg Ile Ser Gly Met Ser Cys
 68 10 15 20 25
 70 tct gcg tgc gcc cac cgt gtg gaa tcg acc ctc aac aag ctg ccg ggg 630
 71 Ser Ala Cys Ala His Arg Val Glu Ser Thr Leu Asn Lys Leu Pro Gly
 72 30 35 40
 74 gtt cgg gca gct gtg aac ttc ggc acc cgg gtg gca acc atc gac acc 678
 75 Val Arg Ala Ala Val Asn Phe Gly Thr Arg Val Ala Thr Ile Asp Thr
 76 45 50 55
 78 agc gag gcg gtc gac gct gcc gcg ctg tgc cag gcg gtc cgc cgc gcg 726
 79 Ser Glu Ala Val Asp Ala Ala Ala Leu Cys Gln Ala Val Arg Arg Ala
 80 60 65 70

#18/K.T.
 8/17
 Raw
 Seq.
 using

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/432,820

DATE: 07/19/2001

TIME: 15:45:44

Input Set : A:\A57004-4.ST25.txt

Output Set: N:\CRF3\07192001\I432820.raw

82	ggc tat cag gcc gat ctg tgc acg gat gac ggt cgg agc gcg agt gat	774
83	Gly Tyr Gln Ala Asp Leu Cys Thr Asp Asp Gly Arg Ser Ala Ser Asp	
84	75 80 85	
86	ccg gac gcc gac cac gct cga cag ctg ctg atc cgg cta gcg atc gcc	822
87	Pro Asp Ala Asp His Ala Arg Gln Leu Leu Ile Arg Leu Ala Ile Ala	
88	90 95 100 105	
90	gcc gtg ctg ttt gtg ccc gtg gcc gat ctg tcg gtg atg ttt ggg gtc	870
91	Ala Val Leu Phe Val Pro Val Ala Asp Leu Ser Val Met Phe Gly Val	
92	110 115 120	
94	gtg cct gcc acg cgc ttc acc ggc tgg cag tgg gtg cta agc gcg ctg	918
95	Val Pro Ala Thr Arg Phe Thr Gly Trp Gln Trp Val Leu Ser Ala Leu	
96	125 130 135	
98	gca ctg ccg gtc gtg acc tgg gcg gcg tgg ccg ttt cac cgc gtt gcg	966
99	Ala Leu Pro Val Val Thr Trp Ala Ala Trp Pro Phe His Arg Val Ala	
100	140 145 150	
102	atg cgc aac gcc cgc cac cac gcc gcc tcc atg gag acg cta atc tcg	1014
103	Met Arg Asn Ala Arg His His Ala Ala Ser Met Glu Thr Leu Ile Ser	
104	155 160 165	
106	gtc ggt atc acg gcc gcc acg atc tgg tcg ctg tac acc gtc ttc ggc	1062
107	Val Gly Ile Thr Ala Ala Thr Ile Trp Ser Leu Tyr Thr Val Phe Gly	
108	170 175 180 185	
110	aat cac tcg ccc atc gag cgc agc ggc ata tgg cag gcg ctg ctg gga	1110
111	Asn His Ser Pro Ile Glu Arg Ser Gly Ile Trp Gln Ala Leu Leu Gly	
112	190 195 200	
114	agc gat gct att tat ttc gag gtc gcg gcg ggt gtc acg gtg ttc gtg	1158
115	Ser Asp Ala Ile Tyr Phe Glu Val Ala Ala Gly Val Thr Val Phe Val	
116	205 210 215	
118	ctg gtg ggg cgg tat ttc gag gcg cgc gcc aag tcg cag gcg ggc agt	1206
119	Leu Val Gly Arg Tyr Phe Glu Ala Arg Ala Lys Ser Gln Ala Gly Ser	
120	220 225 230	
122	gcg ctg aga gcc ttg gcg gcg ctg agc gcc aag gaa gta gcc gtc ctg	1254
123	Ala Leu Arg Ala Leu Ala Ala Leu Ser Ala Lys Glu Val Ala Val Leu	
124	235 240 245	
126	cta ccg gat ggg tcg gag atg gtc atc ccg gcc gac gaa ctc aaa gaa	1302
127	Leu Pro Asp Gly Ser Glu Met Val Ile Pro Ala Asp Glu Leu Lys Glu	
128	250 255 260 265	
130	cag cag cgc ttc gtg gtg cgt cca ggg cag ata gtt gcc gcc gac ggc	1350
131	Gln Gln Arg Phe Val Val Arg Pro Gly Gln Ile Val Ala Ala Asp Gly	
132	270 275 280	
134	ctc gcc gtc gac ggg tcc gct gcg gtc gac atg agc gcg atg acc ggc	1398
135	Leu Ala Val Asp Gly Ser Ala Ala Val Asp Met Ser Ala Met Thr Gly	
136	285 290 295	
138	gag gcc aaa ccg acc cgg gtg cgt ccg ggg ggg cag gtc atc ggc ggc	1446
139	Glu Ala Lys Pro Thr Arg Val Arg Pro Gly Gly Gln Val Ile Gly Gly	
140	300 305 310	
142	acc aca gtg ctt gac ggc cgg ctg atc gtg gag gcg gcc gcg gtg ggc	1494
143	Thr Thr Val Leu Asp Gly Arg Leu Ile Val Glu Ala Ala Ala Val Gly	
144	315 320 325	
146	gcc gac acc cag ttc gcc gga atg gtc cgc ctc gtt gag caa gcg cag	1542

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/432,820

DATE: 07/19/2001

TIME: 15:45:44

Input Set : A:\A57004-4.ST25.txt

Output Set: N:\CRF3\07192001\I432820.raw

147	Ala	Asp	Thr	Gln	Phe	Ala	Gly	Met	Val	Arg	Leu	Val	Glu	Gln	Ala	Gln	
148	330					335					340					345	
150	gcg	caa	aag	gcc	gac	gca	cag	cga	cta	gcc	gac	cgg	atc	tcc	tcg	gtg	1590
151	Ala	Gln	Lys	Ala	Asp	Ala	Gln	Arg	Leu	Ala	Asp	Arg	Ile	Ser	Ser	Val	
152				350						355					360		
154	ttt	gtt	ccc	gct	gtg	ttg	gtt	atc	gcg	gca	cta	acc	gca	gcc	gga	tgg	1638
155	Phe	Val	Pro	Ala	Val	Leu	Val	Ile	Ala	Ala	Leu	Thr	Ala	Ala	Gly	Trp	
156				365					370					375			
158	cta	atc	gcc	ggg	gga	caa	ccc	gac	cgt	gcc	gtc	tcg	gcc	gca	ctc	gcc	1686
159	Leu	Ile	Ala	Gly	Gly	Gln	Pro	Asp	Arg	Ala	Val	Ser	Ala	Ala	Leu	Ala	
160				380					385					390			
162	gtg	ctt	gtc	atc	gcc	tgc	ccg	tgt	gcc	ctg	ggg	ctg	gcg	act	ccg	acc	1734
163	Val	Leu	Val	Ile	Ala	Cys	Pro	Cys	Ala	Leu	Gly	Leu	Ala	Thr	Pro	Thr	
164		395				400					405						
166	gcg	atg	atg	gtg	gcc	tct	ggt	cgc	ggt	gcc	cag	ctc	gga	ata	ttt	ctg	1782
167	Ala	Met	Met	Val	Ala	Ser	Gly	Arg	Gly	Ala	Gln	Leu	Gly	Ile	Phe	Leu	
168	410					415				420						425	
170	aag	ggc	tac	aaa	tcg	ttg	gag	gcc	acc	cgc	gcg	gtg	gac	acc	gtc	gtc	1830
171	Lys	Gly	Tyr	Lys	Ser	Leu	Glu	Ala	Thr	Arg	Ala	Val	Asp	Thr	Val	Val	
172					430					435					440		
174	ttc	gac	aag	acc	ggc	acc	ctg	acg	acg	ggc	cgg	ctg	cag	gtc	agt	gcg	1878
175	Phe	Asp	Lys	Thr	Gly	Thr	Leu	Thr	Thr	Gly	Arg	Leu	Gln	Val	Ser	Ala	
176				445						450				455			
178	gtg	acc	gcg	gca	ccg	ggc	tgg	gag	gcc	gac	cag	gtg	ctc	gcc	ttg	gcc	1926
179	Val	Thr	Ala	Ala	Pro	Gly	Trp	Glu	Ala	Asp	Gln	Val	Leu	Ala	Leu	Ala	
180				460					465					470			
182	gcg	acc	gtg	gaa	gcc	gcg	tcc	gag	cac	tcg	gtg	gcg	ctc	gcg	atc	gcc	1974
183	Ala	Thr	Val	Glu	Ala	Ala	Ser	Glu	His	Ser	Val	Ala	Leu	Ala	Ile	Ala	
184				475					480					485			
186	gcg	gca	acg	act	cgg	cga	gac	gcg	gtc	acc	gac	ttt	cgc	gcc	ata	ccc	2022
187	Ala	Ala	Thr	Thr	Arg	Arg	Asp	Ala	Val	Thr	Asp	Phe	Arg	Ala	Ile	Pro	
188	490					495					500					505	
190	ggc	cgc	ggc	gtc	agc	ggc	acc	gtg	tcc	ggg	cgg	gcg	gta	cgg	gtg	ggc	2070
191	Gly	Arg	Gly	Val	Ser	Gly	Thr	Val	Ser	Gly	Arg	Ala	Val	Arg	Val	Gly	
192					510					515					520		
194	aaa	ccg	tca	tgg	atc	ggg	tcc	tcg	tcg	tgc	cac	ccc	aac	atg	cgc	gcg	2118
195	Lys	Pro	Ser	Trp	Ile	Gly	Ser	Ser	Ser	Cys	His	Pro	Asn	Met	Arg	Ala	
196					525					530				535			
198	gcc	cgg	cgc	cac	gcc	gaa	tcg	ctg	ggt	gag	acg	gcc	gta	ttc	gtc	gag	2166
199	Ala	Arg	Arg	His	Ala	Glu	Ser	Leu	Gly	Glu	Thr	Ala	Val	Phe	Val	Glu	
200				540					545					550			
202	gtc	gac	ggc	gaa	cca	tgc	ggg	gtc	atc	gcg	gtc	gcc	gac	gcc	gtc	aag	2214
203	Val	Asp	Gly	Glu	Pro	Cys	Gly	Val	Ile	Ala	Val	Ala	Asp	Ala	Val	Lys	
204				555					560					565			
206	gac	tcg	gcg	cga	gac	gcc	gtg	gcc	gcc	ctg	gcc	gat	cgt	ggt	ctg	cgc	2262
207	Asp	Ser	Ala	Arg	Asp	Ala	Val	Ala	Ala	Leu	Ala	Asp	Arg	Gly	Leu	Arg	
208	570					575				580						585	
210	acc	atg	ctg	ttg	acc	ggt	gac	aat	ccc	gaa	tcg	gcg	gcg	gcc	gtg	gct	2310
211	Thr	Met	Leu	Leu	Thr	Gly	Asp	Asn	Pro	Glu	Ser	Ala	Ala	Ala	Val	Ala	

RAW SEQUENCE LISTING

DATE: 07/19/2001

PATENT APPLICATION: US/09/432,820

TIME: 15:45:44

Input Set : A:\A57004-4.ST25.txt

Output Set: N:\CRF3\07192001\I432820.raw

```

212          590          595          600
214 act cgc gtc ggc atc gac gag gtg atc gcc gac atc ctg ccg gaa ggc      2358
215 Thr Arg Val Gly Ile Asp Glu Val Ile Ala Asp Ile Leu Pro Glu Gly
216          605          610          615
218 aag gtc gat gtc atc gag cag cta cgc gac cgc gga cat gtc gtc gcc      2406
219 Lys Val Asp Val Ile Glu Gln Leu Arg Asp Arg Gly His Val Val Ala
220          620          625          630
222 atg gtc ggt gac ggc atc aac gac gga ccc gca ctg gcc cgt gcc gat      2454
223 Met Val Gly Asp Gly Ile Asn Asp Gly Pro Ala Leu Ala Arg Ala Asp
224          635          640          645
226 cta ggc atg gcc atc ggg cgc ggc acg gac gtc gcg atc ggt gcc gcc      2502
227 Leu Gly Met Ala Ile Gly Arg Gly Thr Asp Val Ala Ile Gly Ala Ala
228 650          655          660          665
230 gac atc atc ttg gtc cgc gac cac ctc gac gtt gta ccc ctt gcg ctt      2550
231 Asp Ile Ile Leu Val Arg Asp His Leu Asp Val Val Pro Leu Ala Leu
232          670          675          680
234 gac ctg gca agg gcc acg atg cgc acc gtc aaa ctc aac atg gtc tgg      2598
235 Asp Leu Ala Arg Ala Thr Met Arg Thr Val Lys Leu Asn Met Val Trp
236          685          690          695
238 gca ttc gga tac aac atc gcc gcg att ccc gtc gcc gct gcc gga ctg      2646
239 Ala Phe Gly Tyr Asn Ile Ala Ala Ile Pro Val Ala Ala Ala Gly Leu
240          700          705          710
242 ctc aac ccc ctg gtg gcc ggt gcg gcc atg gcg ttc tca tcg ttc ttc      2694
243 Leu Asn Pro Leu Val Ala Gly Ala Ala Met Ala Phe Ser Ser Phe Phe
244          715          720          725
246 gtg gtc tca aac agc ttg cgg ttg cgc aaa ttt ggg cga tac ccg cta      2742
247 Val Val Ser Asn Ser Leu Arg Leu Arg Lys Phe Gly Arg Tyr Pro Leu
248 730          735          740          745
250 ggc tgc gga acc gtc ggt ggg cca caa atg acc gcg ccg tcg tcc gcg      2790
251 Gly Cys Gly Thr Val Gly Gly Pro Gln Met Thr Ala Pro Ser Ser Ala
252          750          755          760
254 tgatgcgttg tcgggcaaca cgatatcggg ctacgcggcg accgcatccg gtctcggccg      2850
256 aggaccagag gcgcttcgcc acaccatgat tgccaggacc gcgccgatca ccaccggcag      2910
258 atgagtcaaa atccgcgttg tgctgaccgc gccggacagc gcatccacaa tcacatagcc      2970
260 ggtcagtatg gcgacgaacg ccgtcagaac accggccagg ccggcggcgg cgctcggcca      3030
262 tagcgcgcgc cccaccatga tcacaccgag cgcaatcgac cacgacgtga ctcggtgagc      3090
264 aagtgggtgc cggcaccgt cggtgctga tgggtcaggc cgacgtctag gccaaacccc      3150
266 tgcacggtgc ccagggcgat ctgcgcgatg cccacgcaca gcaacgcccc acgtcgccag      3210
268 gtcacggtg aatgttgccg ccgcggcgcc cggcggtacc      3250
271 <210> SEQ ID NO: 2
272 <211> LENGTH: 761
273 <212> TYPE: PRT
274 <213> ORGANISM: Mycobacterium bovis
277 <400> SEQUENCE: 2
278 Met Thr Ala Ala Val Thr Gly Glu His His Ala Ser Val Gln Arg Ile
279 1          5          10          15
281 Gln Leu Arg Ile Ser Gly Met Ser Cys Ser Ala Cys Ala His Arg Val
282          20          25          30
284 Glu Ser Thr Leu Asn Lys Leu Pro Gly Val Arg Ala Ala Val Asn Phe

```

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/432,820

DATE: 07/19/2001

TIME: 15:45:44

Input Set : A:\A57004-4.ST25.txt

Output Set: N:\CRF3\07192001\I432820.raw

```

285          35          40          45
287 Gly Thr Arg Val Ala Thr Ile Asp Thr Ser Glu Ala Val Asp Ala Ala
288      50          55          60
290 Ala Leu Cys Gln Ala Val Arg Arg Ala Gly Tyr Gln Ala Asp Leu Cys
291 65          70          75          80
293 Thr Asp Asp Gly Arg Ser Ala Ser Asp Pro Asp Ala Asp His Ala Arg
294          85          90          95
296 Gln Leu Leu Ile Arg Leu Ala Ile Ala Ala Val Leu Phe Val Pro Val
297          100          105          110
299 Ala Asp Leu Ser Val Met Phe Gly Val Val Pro Ala Thr Arg Phe Thr
300          115          120          125
302 Gly Trp Gln Trp Val Leu Ser Ala Leu Ala Leu Pro Val Val Thr Trp
303      130          135          140
305 Ala Ala Trp Pro Phe His Arg Val Ala Met Arg Asn Ala Arg His His
306 145          150          155          160
308 Ala Ala Ser Met Glu Thr Leu Ile Ser Val Gly Ile Thr Ala Ala Thr
309          165          170          175
311 Ile Trp Ser Leu Tyr Thr Val Phe Gly Asn His Ser Pro Ile Glu Arg
312          180          185          190
314 Ser Gly Ile Trp Gln Ala Leu Leu Gly Ser Asp Ala Ile Tyr Phe Glu
315          195          200          205
317 Val Ala Ala Gly Val Thr Val Phe Val Leu Val Gly Arg Tyr Phe Glu
318          210          215          220
320 Ala Arg Ala Lys Ser Gln Ala Gly Ser Ala Leu Arg Ala Leu Ala Ala
321 225          230          235          240
323 Leu Ser Ala Lys Glu Val Ala Val Leu Leu Pro Asp Gly Ser Glu Met
324          245          250          255
326 Val Ile Pro Ala Asp Glu Leu Lys Glu Gln Gln Arg Phe Val Val Arg
327          260          265          270
329 Pro Gly Gln Ile Val Ala Ala Asp Gly Leu Ala Val Asp Gly Ser Ala
330          275          280          285
332 Ala Val Asp Met Ser Ala Met Thr Gly Glu Ala Lys Pro Thr Arg Val
333          290          295          300
335 Arg Pro Gly Gly Gln Val Ile Gly Gly Thr Thr Val Leu Asp Gly Arg
336 305          310          315          320
338 Leu Ile Val Glu Ala Ala Ala Val Gly Ala Asp Thr Gln Phe Ala Gly
339          325          330          335
341 Met Val Arg Leu Val Glu Gln Ala Gln Ala Gln Lys Ala Asp Ala Gln
342          340          345          350
344 Arg Leu Ala Asp Arg Ile Ser Ser Val Phe Val Pro Ala Val Leu Val
345          355          360          365
347 Ile Ala Ala Leu Thr Ala Ala Gly Trp Leu Ile Ala Gly Gly Gln Pro
348          370          375          380
351 Asp Arg Ala Val Ser Ala Ala Leu Ala Val Leu Val Ile Ala Cys Pro
352 385          390          395          400
354 Cys Ala Leu Gly Leu Ala Thr Pro Thr Ala Met Met Val Ala Ser Gly
355          405          410          415
357 Arg Gly Ala Gln Leu Gly Ile Phe Leu Lys Gly Tyr Lys Ser Leu Glu
358          420          425          430

```

VERIFICATION SUMMARY

PATENT APPLICATION: US/09/432,820

DATE: 07/19/2001

TIME: 15:45:45

Input Set : A:\A57004-4.ST25.txt

Output Set: N:\CRF3\07192001\I432820.raw